

What is claimed is:

1. An axial flow pump comprising:

a case having an outer wall, a fluid suction port and a discharge port, the outer wall having a first thermal conductivity;

a stator having winding and disposed in the case;

a cylindrical inner wall disposed inside the stator and in contact with the stator, the inner wall having a second thermal conductivity higher than the first thermal conductivity of the outer wall;

a rotor disposed inside the inner wall and rotated upon energization of the winding of the stator, the energization of the winding causing generation of heat from the winding; and

a flow path formed between the rotor and the inner wall, the flow path being communicated in fluid with the fluid suction port and the fluid discharge port,

wherein the heat from the winding is transferred to the fluid in the flow path through the inner wall due to difference of the thermal conductivity between the outer wall and the inner wall.

2. A pump according to claim 1, wherein the cylindrical inner wall includes a non-magnetic cylindrical metal plate

and the outer wall includes a resin.

3. A pump according to claim 1, wherein the outer wall has an inner surface and further includes a plurality of projections extending from the inner surface toward the stator to support the stator.

4. A fluid circulating apparatus comprising:

a fluid circulation path;

a heater for heating fluid circulating through the fluid circulation path; and an axial flow pump comprising:

a case having an outer wall, a fluid suction port and a discharge port, the outer wall having a first thermal conductivity;

a stator having winding and disposed in the case;

a cylindrical inner wall disposed inside the stator and in contact with the stator, the inner wall having a second thermal conductivity higher than the first thermal conductivity of the outer wall;

a rotor disposed inside the inner wall and rotated upon energization of the winding of the stator, the energization of the winding causing generation of heat from the winding; and

a flow path formed between the rotor and the inner

wall, the flow path being communicated in fluid with the fluid suction port and the fluid discharge port,

wherein, with the rotation of the rotor, the fluid is circulated in the fluid circulation path.

5. A fluid circulating apparatus according to claim 4, further comprising:

an object to be heated which is disposed in the fluid path; and

a temperature sensor for detecting the temperature of the fluid, the temperature sensor being disposed between the axial flow pump and the object.